

REMARKS/ARGUMENTS

Claims 1, 2, 4-7, 9, 10, 12-15 and 17 are pending. By this Amendment, claims 1, 4, 9, 12 and 17 are amended. Claims 3, 8, 11 and 16 are canceled. Reconsideration in view of the above amendments and the following remarks are respectfully requested.

Claims 3, 4, 8, 11, 12 and 16 were rejected under 35 U.S.C. §112, second paragraph. By this Amendment, the subject matter of claims 3 and 8 have been incorporated into claims 1 and 9, respectively, providing for proper antecedent basis for “a jet”. In addition, claims 4 and 12 have been amended to depend from claims 1 and 9, respectively.

Claims 8 and 16 have been canceled in order to avoid the drawings objection under 37 CFR 1.83(a).

Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 1, 2, 4-10 and 12-16 were rejected under 35 U.S.C. §102(b) over McConkey (U.S. Patent No. 5,494,134). This rejection is respectfully traversed at least because claims 1 and 9 respectively include the subject matter of canceled claims 3 and 11, which were not said to be anticipated by McConkey.

Reconsideration and withdrawal of the rejection are respectfully requested.

However, claims 3 and 11 were rejected under 35 U.S.C. §103(a) over McConkey in view of Raghavan et al. (U.S. Patent No. 5,417,607), and claims 1-17 were rejected under 35 U.S.C. §102(b) over Patrick (U.S. Patent No. 6,203,857). These rejections are respectfully traversed.

Independent claims 1 and 9 specify that the jet consist of particles having sufficiently small and substantially homogenous dimensions. See page 7, line 14 through page 8, line 10 of

the original application for support for this subject matter, as well as advantages pertaining thereto.

Moreover, one of the objects of the present technology is to provide a method and a device to allow improved cooling action of the cooling-lubricant fluid and, at the same time, to limit the consumption of the fluid. See page 5, lines 23-26 of the PCT application.

US 5,494,134 by McConkey teaches to use high pressure and velocity in order to force the coolant fluid into locations not reached by the low pressure flooding systems. From the description of this document, it is clear that the consumption of lubricant/cooling fluid is very high if compared to the presently claimed invention.

The system of McConkey uses nozzles with a diameter ranging between 0.020 and 0.1 inches (col. 3, line 52) corresponding to a range between 0.508 and 2.54 mm; the fluid can be fed at a pressure ranging from 300 psi to 2000 psi (col. 4, lines 63-64) corresponding to a range from 20 to 160 bar. Under these conditions, the flow rate (and thus the consumption) of the cooling-lubricant fluid ranges from 3.5 to 40 gallons per minute (col. 4, lines 49-52) corresponding to a range from 13.23 to 151.2 l/mm.

By a comparison with the data of Examples 1-6 of the present patent application (summarized in the respective Tables 1-6), it is immediately clear that the presently claimed invention allows to reduce the consumption of fluid not only with respect to traditional flooding systems, but also with respect to the system disclosed by McConkey.

The following table allows a comparison of the ranges of the data at a glance:

	McConkey system	Traditional system	System of the invention
Nozzle diameter (mm)	0.508-2.54	-	0.1-0.8
Pressure (bar)	20-160	2-8	15-60
Flow rate (l/mm)	13.23-151.2	5-15	0.4-2.4

Therefore, the improvements in the cooling action and chip removal as stated by McConkey on col. 2, lines 1-7 involve a very high consumption of fluid and, consequently, the system suffers of the same drawbacks put in evidence on page 3, lines 6-19 of the present patent application with reference to the traditional systems. In other words, even though McConkey is the only document which properly relates to the cooling of the tool/workpiece in machining, this document does not teach how to improve the heat/chip removal and limit, at the same time, the consumption of the fluid.

The explanation of the effects obtained by the system of the claimed invention has been partially included in the independent claims and can be found in the original description of the PCT application from page 7, line 14 to page 8, line 24.

On the other hand, Raghavan and Patrick are both silent about heat removal from a workpiece during machining.

Raghavan only discloses a method and a nozzle to generate a fan shaped jet having cleaning and/or cutting purposes. Patrick relates to a system for applying a coating of lubricating fluid to workpieces in view of subsequent manufacturing operations on the same pieces (col. 1, lines 10-13).

Therefore, there is not teaching in the other documents that would suggest to one of ordinary skill in the art that the cooling-lubricant fluid, when atomized by airless nozzles (thus without using air as a carrier), causes a very improved cooling action; and no suggestion can be found in the prior art that such improvements can be obtained with a very low consumption of the fluid.

Reconsideration and withdrawal of the rejection are respectfully requested.

In view of the above amendments and remarks, Applicants respectfully submit that all the claims are patentable and that the entire application is in condition for allowance.

The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Account No. 14-1140 under Order No. PTB-3687-131.

Should the Examiner believe that anything further is desirable to place the application in better condition for allowance, he is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: /Paul T. Bowen/
Paul T. Bowen
Reg. No. 38,009

PTB:jck
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100